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Association of Medicaid Expansion and Health Insurance with Receipt of Smoking Cessation Services and Smoking Behaviors in Substance Use Disorders Treatment

Running head: Medicaid expansion and health insurance among smokers in addiction treatment

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Keywords: tobacco, smoking cessation services, SUD treatment, Medicaid, Affordable Care Act, health insurance

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Abstract

This study examined whether living in a Medicaid-expanded state or having health insurance were associated with receipt of smoking cessation services or smoking behaviors among substance use disorder (SUD) treatment clients.

In 2015 and 2016, 1,702 SUD clients in 14 states were surveyed for health insurance status, smoking cessation services received in their treatment program, and smoking behaviors. Services and behaviors were then compared by state Medicaid expansion and health insurance status independently.

Clients in Medicaid-expanded states were more likely to be insured (89.9% vs. 54.4%, $p < .001$) and to have quit smoking during treatment (AOR = 3.77, 95% CI = 2.47, 5.76). Insured clients had higher odds of being screened for smoking status in their treatment program and making quit attempts in the past year.

Medicaid expansion supports greater health insurance coverage of individuals in SUD treatment and may enhance smoking cessation.

Introduction

Although individuals with substance use disorders (SUDs) have increasing access to behavioral health care as a result of the Affordable Care Act (ACA),[1,2] smoking continues to be highly prevalent among clients in SUD treatment. Among a national sample of clients in SUD treatment in 2015, 77.9% reported current smoking.[3] Compared with the general population, people with SUDs disproportionately carry the burden of tobacco-related diseases and are more likely to die prematurely from complications related to smoking than their primary drug of choice.[4-6] While cigarette smoking is associated with increased risk of SUD relapse,[7] smoking cessation during SUD treatment may improve SUD recovery outcomes,[8] including better long-term abstinence or remission from substance use.[9] Policies that facilitate smoking cessation among people with SUDs are needed to decrease this health disparity.

Nearly 20 million people have gained health insurance and access to healthcare in the United States (US) since 2014 because of the ACA, partly through state-sanctioned expansion of Medicaid health insurance coverage. Medicaid expansion widens the criteria for Medicaid eligibility to include all adults with incomes at or below 133% of the federal poverty level.[10] For people with SUDs, the ACA increases access to SUD treatment services in Medicaid-expanded states through healthcare coverage expansion, mandating coverage of SUD treatment by insurance plans, and expanding the 2008 Mental Health Parity and Addiction Equity Act.[11,12] As of November 2018, 37 states have expanded Medicaid.[13] States that expanded Medicaid had a 45.2% reduction of uninsured residents between 2010 and 2015, while states that did not expand Medicaid had only a 29.3% decline in uninsured rates.[14]

Gaining health insurance, including through expansion of Medicaid in one's state, increases access to smoking cessation services. Specific provisions of the ACA address expanding Medicaid coverage for smoking cessation services.[15] Smokers in states that expanded Medicaid had higher rates of smoking cessation medication utilization than in states that did not (12% vs. 7%).[16] According to National Health Interview Survey data between 2011 and 2015, 52 – 59.9% of smokers in the general population received advice on quitting smoking from a health professional, vs. 32.7 – 44.1% of uninsured smokers.[17,18] About 32.2% of the Medicaid-insured individuals have used smoking cessation medication vs. 20.0% of uninsured individuals, and 8.0% vs. 4.3% received smoking cessation counseling.[16,18] Bailey et al.[19] found that low-income community health center patients who gained Medicaid coverage were more likely to receive a prescription for smoking cessation medication and to quit smoking than their uninsured counterparts.

Among the general population, state Medicaid expansion and health insurance status were also found to be related to smoking behavior, including quit attempts and smoking cessation. Data from the 2014 Behavioral Risk Factor Surveillance System showed that smokers enrolled in Medicaid were more likely to make a past year quit attempt than uninsured smokers (71.5% vs. 66.4%).[20] Greater state-level comprehensiveness of Medicaid coverage of smoking cessation services was positively associated with smoking quit rates among Medicaid recipients.[21] In 2006, Massachusetts mandated health insurance coverage of individual and group smoking cessation counseling, and all FDA-approved smoking cessation medications (nicotine patch, gum, lozenge, spray and inhaler, bupropion and varenicline). Following this mandate, the smoking rate among state Medicaid recipients declined from 38.3% (pre-mandate) to 28.3% (post-mandate).[22]

The literature on persons in SUD treatment has documented the availability of smoking cessation services in their treatment program, and their smoking cessation behavior. Knudsen[23] reports that 30-40% of SUD treatment programs offer smoking cessation counseling and about 26% offer at least one smoking cessation medication. Campbell et al.[24] reports a 7.6% quit rate for clients during their SUD treatment period. Data from the National Survey on Substance Abuse Treatment Services[12,25] and a study of 372 SUD treatment programs[26] found that greater reliance of programs on Medicaid revenue was positively associated with availability of smoking cessation counseling and medications.

Despite an abundance of studies on smoking cessation services and smoking behaviors among persons in SUD treatment, the literature has not explored the relationship of these outcomes with client health insurance status under the context of Medicaid expansion. This study aims to fill this gap by examining client-reported receipt of smoking cessation services in SUD treatment and downstream smoking behavior as they relate to health insurance status. Our hypotheses were that clients living in a Medicaid-expanded state would be more likely to have health insurance, and that state Medicaid expansion and health insurance status would independently predict greater receipt of smoking cessation services and better smoking behavior outcomes (e.g. lower cigarette consumption, greater quit rates).

Methods

Program selection, participant recruitment, and data collection procedures

We recruited 24 SUD treatment programs (7 outpatient, 10 residential and 7 methadone maintenance) participating in the National Institute on Drug Abuse (NIDA) Clinical Trials Network (CTN), located in 14 States. Briefly, methadone

programs are ambulatory treatment for opiate dependence that administer daily doses of methadone for clients at the clinic site. Non-methadone outpatient and residential programs additionally treat dependence on other drugs. Non-methadone outpatient programs generally involve one or two visits per week, while residential programs involve highly structured daily treatment with the clients living onsite.[27] Further details on program selection and recruitment can be found elsewhere.[3]

A two-person research team visited each program in 2015 and 2016, recruiting 33 to 55 clients (median = 50) from each program per year, to take an anonymous survey self-administered on an iPad. A census sample of residential program clients were recruited throughout the day, convenience samples of methadone maintenance clients were recruited during dosing hours, and outpatient clients were recruited after counseling group sessions. All clients who began the consent procedure also completed the survey. Each respondent received a $20 gift card, and each program received a $2,000 incentive following each site visit. Details of program selection and participant recruitment are previously reported.[3] Study procedures were approved by the <<blinded for review>> Institutional Review Board.

Measures

State Medicaid expansion and health insurance status. At the time of the study in 2015 and 2016, 8 of the 14 states where the programs were located had expanded Medicaid (CA, CT, HI, NY, OH, OR, PA, WV), and 6 had not (FL, NC, SC, SD, TX, VA).[13] Thirteen programs resided in Medicaid-expanded states, with 11 programs in non-expanded states. All clients were asked if they currently have health insurance (Yes, No, Don’t know/Not sure).

Program level tobacco policy. Program directors were interviewed by phone after each site visit, concerning tobacco policies in their program.[28] A tobacco-free grounds policy was defined as a complete smoking ban indoors, outdoors, and on program grounds outside the building. Transcribed interviews were rated by two raters who assessed whether each clinic did or did not have tobacco-free grounds (kappa=0.73). Disagreements on policy status were resolved through discussing with a third rater.[29]

Demographic characteristics included age, gender, race/ethnicity, education, employment status, and type of program where they were recruited (Outpatient, residential, methadone).

Smoking cessation services received in the current SUD treatment program. All clients were asked whether they were ever screened for smoking status ("Did any staff member ask whether you smoke?"). Smokers were asked whether they had been advised to quit ("Did you receive advice on how to quit smoking?") and whether they received any referrals to either a smoking cessation specialist or to a smoking quitline. Responding "Yes" to at least one of the latter two counted as receiving Any Referrals. Smokers also reported whether they had attended a support group for people who are trying to quit, how often their counselor encouraged them to quit smoking (Never, Occasionally, Often, Very Often, Always) and arranged a follow up appointment to discuss quitting (Never, Occasionally, Often, Very Often, Always). The last two items were dichotomized as Never vs. Occasionally/Often/Very Often/Always. Receiving one or more of these services was defined as having received Any Counseling. Lastly, smokers reported whether, in their current treatment program, they received nicotine replacement therapy (NRT) (gum, patch, lozenge, nasal spray, or inhaler), or tobacco cessation

pharmacotherapy (bupropion or varenicline). Receipt of any of these medications was defined as Any NRT/Pharmacotherapy.

Smoking behaviors. Participants self-identified as current, former, or never smokers. Current smoking was defined as having smoked more than 100 cigarettes in lifetime, and self-identification as a current smoker.[30] Former smokers were asked whether they had quit while in the current treatment program. Current smokers reported number of cigarettes per day (CPD), whether they made a quit attempt in the past year, and whether they wanted help with quitting smoking while in the current treatment program.

Data Analysis

Combining the 2015 and 2016 samples, 2,275 participants responded to the question "Do you have any kind of health care coverage?" To maintain independent samples, cases who reported taking the survey in 2015 (n = 94) were removed. Participants who responded "don't know/not sure" to the health care coverage question (n = 101) were also removed. Last, we removed cases who had been in treatment for longer than 2 years (n = 378), because their responses could reflect health care status before the 2014-2016 Medicaid expansion years. Included in the current analyses were 1,702 cases. Because the proportion of clients with health insurance (72.7% vs. 74.0%), and the proportion of clients living in Medicaid-expanded states (53.1% vs. 54.0%) did not differ significantly between 2015 and 2016 ($p = .557$, $p = .717$), we collapsed data across time for analysis.

We first compared demographic characteristics of all 1,702 clients by state Medicaid expansion and health insurance status using t-test for continuous outcomes and chi-square test for categorical outcomes. Second, we conducted

unadjusted comparisons of smoking cessation service outcomes and smoking behavior outcomes by state Medicaid expansion and health insurance status.

Third, including service and behavior outcomes that were significantly related at $p \leq 0.05$ in the unadjusted models, we conducted multivariate regression analyses comparing smoking cessation service and smoking behavior outcomes by state Medicaid expansion and health insurance status together in the same models. Logistic regression models were used for dichotomous outcomes, and Poisson regression models for count outcome (CPD). All multivariate regression models adjusted for age, gender, race/ethnicity, education, employment status, treatment type, and tobacco-free grounds status. All models also adjusted for nesting of clients within program and nesting of programs within state, to account for program-level differences between clients and state-level differences between programs. Because CPD is related to making quit attempts,[31] the "Past year quit attempts" model was additionally adjusted for CPD. All analyses were conducted using SAS version 9.4.

Results

We compared demographics by state Medicaid expansion status (Table 1). Clients living in Medicaid-expanded states were more likely to be insured (89.9% vs. 54.4%) as compared to clients living in non-expanded states. Clients living in Medicaid-expanded states were also more likely to be older (38.3 vs. 36.6 years), less likely to be women (37.7% vs 55.1%), and less likely to be employed (24.9% vs. 30.2%).

We also compared demographics by health insurance status (Table 1). Insured clients, as compared to those who were uninsured, were more likely to live

in Medicaid-expanded states (65.6% vs. 20.3%), more educated (45.8% vs. 37.9% had greater than a high school degree), and less likely to be employed (26.0% vs. 31.2%). Overall, 73.4% of clients in the sample were insured.

Unadjusted comparisons of smoking cessation service and smoking behavior outcomes by state Medicaid expansion status and health insurance status are shown in Table 2. Most clients were smokers (77.6%). Clients were more likely to be screened for smoking status in their treatment program if they lived in Medicaid-expanded states (79.1% vs. 72.2%), and if they had health insurance (77.4% vs. 71.7%). Clients in Medicaid-expanded states and clients with insurance also reported lower mean CPD (12.7 vs. 13.7 and 12.7 vs. 14.3, respectively). Among clients in our sample who have ever smoked, 16.2% were former smokers. Former smokers who lived in Medicaid-expanded states were more likely to have quit smoking during treatment (49.3% vs. 29.7%). Insured clients were more likely to have made a quit attempt in the past year (49.6% vs. 40.0%).

Multivariate analyses are reported in Table 3. For clients who lived in Medicaid-expanded states, compared to those in non-expanded states, the odds of making a past year quit attempt were slightly lower (adjusted odds ratio [AOR] = 0.81, 95% CI = 0.67, 0.99), while the odds of quitting smoking while in SUD treatment were over 3.5 times higher (AOR = 3.77, 95% CI = 2.47, 5.76). Having health insurance was associated with being screened for smoking status in their treatment program (AOR = 1.18, 95% CI = 1.01, 1.37) and making a quit attempt in the past year (AOR = 1.51, 95% CI = 1.18, 1.93).

Discussion

Clients who lived in states that expanded Medicaid were more likely to have health insurance than those in states that did not expand Medicaid, echoing US general population findings.[32] Clients with health insurance had higher odds of being screened for tobacco use in their SUD treatment program and making a quit attempt in the past year, as compared to uninsured clients.[20] Clients in Medicaid-expanded states were slightly less likely to have made a quit attempt in the past year. However, they were over 3.5 times as likely to quit smoking during their SUD treatment. This finding is consistent with prior research showing that state Medicaid expansion was associated with increased smoking cessation among low-income adults.[19,33,34]

Medicaid-expanded states are different in many ways from non-expanded states, which may explain the difference in odds of clients quitting smoking during treatment. Expanded states may offer more resources to help insured clients quit smoking, including greater access to preventive and primary healthcare services,[37,38] boosting support for clients who both have health insurance and live in a Medicaid-expanded state. States with vs. without Medicaid expansion may also differ in state tobacco control program infrastructure and policies, client awareness of smoking cessation services, and social and cultural norms.[39,40] In our sample, more programs in non-expanded states had tobacco-free grounds (n = 4) than in expanded states (n = 2), accounting for the greater proportion of clients in non-expanded states being treated in such facilities (Table 1). However, due to the small number of programs (n = 24) and states (n = 14, 27%) included in our study, the relationship between tobacco-free grounds and Medicaid expansion is not generalizable.

The finding that odds of making a past year quit attempt among clients in Medicaid-expanded states were lower than that among clients in non-Medicaid expanded states (AOR = 0.81, 95% CI 0.67, 0.99) seems counterintuitive. To explore this, we re-ran the same model without controlling for health insurance status, and the finding was no longer significant (AOR = 1.01, 95% CI 0.88, 1.16). We also examined the unadjusted association between past year quit attempts and Medicaid expansion, stratified by insurance status, and found no significant association (data not shown). We believe that the significant association observed in the adjusted model controlling for health insurance (Table 3) may be influenced by the small number of smokers in Medicaid expanded states who were not insured (n = 28), such that the estimate is unstable and/or has limited generalizability.

Both state Medicaid expansion and health insurance status did not differentiate clients in receipt of most smoking cessation services in their program, despite predicting better smoking behavior outcomes. One possible explanation is that clients in expanded states and/or with insurance may not be receiving services at increasing rates. It is possible that the time elapsed between implementation of Medicaid expansion in these states (2014) and data collection (2015-2016) was too short to observe impacts of Medicaid expansion on tobacco services. It is also possible that longstanding barriers to receipt of smoking cessation services in SUD treatment programs[35,36] hindered the influence of state Medicaid expansion on provision of smoking cessation services. It may also be that clients in non-expanded states were receiving services at an increased rate. The ACA included provisions to expand Medicaid coverage of smoking cessation services regardless of state expansion status.[15] Last, insured clients may have received smoking cessation services in healthcare settings outside their SUD treatment program, such as

primary care. Having health insurance may support better access to healthcare for low-income smokers,[41] and having increased contact with healthcare touchpoints may present opportunities to encourage cessation or reduction of smoking outside of SUD treatment settings.

Regardless of state Medicaid expansion and health insurance status, the overall smoking cessation rate of SUD treatment clients was low (16.2%). Increasing client receipt of smoking cessation services in their SUD treatment programs would help improve smoking outcomes. This may require addressing program-related barriers, such as inadequate staff knowledge or training in smoking cessation, unsupportive staff attitudes toward smoking cessation, and staff smoking.[36,42] Barriers outside of SUD treatment, such as lack of physician and Medicaid recipients' awareness of Medicaid coverage of NRT and failure of pharmacies to honor no-cost coverage of medication,[43,44] also need to be addressed.

This study is limited by its cross-sectional design with data collected only after the implementation of Medicaid expansion in select states. This design does not permit causal interpretation and does not establish baseline health insurance rates pre-ACA. The survey instrument does not specifically ask clients if they are insured by Medicaid. However, the publicly-funded programs selected for this study primarily serve low-income clients, most of whom are unemployed, which characterizes a population that likely qualifies for Medicaid coverage (Medicaid.gov). Furthermore, expansion of Medicaid eligibility criteria would only create opportunities for members of this population to receive health insurance. Because the survey asks for receipt of smoking cessation services within clients' current treatment program, it does not capture instances of clients receiving services in other facilities during their SUD treatment period, which may lead to

underreporting of general receipt of services. While CPD is related to success in smoking cessation,[45] we were not able to adjust for CPD when using “Quit during treatment” as an outcome because clients who identified as former smokers were not prompted to report CPD in the survey. Lastly, generalizability may be limited, as programs were recruited through the NIDA CTN, and these programs have been shown to differ from non-CTN programs in prior research.[46]

Implications for Behavioral Health

People in SUD treatment smoke at a disproportionately higher rate than the general population. State Medicaid expansion through the ACA was associated with a higher rate of health insurance among SUD treatment clients, and having health insurance and living in a Medicaid-expanded state were both related to better downstream smoking behavior outcomes. Legislation that supports greater health insurance coverage of individuals in SUD treatment may enhance smoking cessation in this population, helping reduce tobacco-related health disparities. However, having health insurance may not translate to receipt of smoking cessation medication in SUD treatment settings. Other strategies that increase clients’ receipt of smoking cessation services in their treatment program may further drive down smoking prevalence.

Conflict of Interest Statement

The authors have not conflicts of interest to report.

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Table 1. Demographic characteristics of substance use disorder treatment clients (N = 1702)

	State Medicaid expansion status			Health insurance status		
	Mean (SD) or n (%)			Mean (SD) or n (%)		p-value
	Expanded (N= 911)	Non-expanded (N= 791)	p-value	Insured (N= 1,249)	Not insured (N= 453)	
Has health insurance	819 (89.9%)	430 (54.4%)	**<.001**	n/a	n/a	n/a
State expanded Medicaid	n/a	n/a	n/a	819 (65.6%)	92 (20.3%)	**<.001**
Age	38.3 (11.91)	36.6 (11.21)	**0.002**	37.8 (11.94)	36.8 (10.66)	0.121
Gender			**<.001**			0.128
Male	558 (61.3%)	352 (44.6%)		655 (52.4%)	255 (56.4%)	
Female	343 (37.7%)	435 (55.1%)		582 (46.6%)	196 (43.4%)	
Other	10 (1.1%)	3 (0.4%)		12 (1.0%)	1 (0.2%)	
Race/ethnicity			**<.001**			0.071
Hispanic/Latino	139 (15.3%)	88 (11.1%)		173 (13.9%)	54 (11.9%)	
Black/African American	135 (14.8%)	138 (17.4%)		185 (14.8%)	88 (19.4%)	
White	465 (51.0%)	479 (60.6%)		688 (55.1%)	256 (56.5%)	
Native American	55 (6.0%)	39 (4.9%)		77 (6.2%)	17 (3.8%)	
Asian/Pacific Islander	43 (4.7%)	5 (0.6%)		38 (3.0%)	10 (2.2%)	
Other	74 (8.1%)	42 (5.3%)		88 (7.0%)	28 (6.2%)	
Education			0.567			**0.015**
<HS	198 (21.8%)	156 (19.7%)		250 (20.0%)	104 (23.1%)	
HS/GED	316 (34.8%)	286 (36.2%)		426 (34.2%)	176 (39.0%)	
>HS	394 (43.4%)	348 (44.1%)		571 (45.8%)	171 (37.9%)	
Currently employed	227 (24.9%)	239 (30.2%)	**0.015**	325 (26.0%)	141 (31.2%)	**0.035**
Treatment type			**<.001**			0.855
Outpatient	295 (32.4%)	263 (33.2%)		413 (33.1%)	145 (32.0%)	
Residential	517 (56.8%)	313 (39.6%)		604 (48.4%)	226 (49.9%)	
Methadone	99 (10.9%)	215 (27.2%)		232 (18.6%)	82 (18.1%)	
Tobacco-free grounds	164 (18.0%)	248 (31.4%)	**<.001**	309 (24.7%)	103 (22.7%)	0.394

Table 2. Associations of service-related and smoking behavior outcomes with State Medicaid expansion status and with health insurance

	Expanded (n = 911)	Non-Expanded (n = 791)	p-value	Health insurance (n = 1,249)	No health insurance (n = 453)	p-value
	n (%) or mean (SD)			n (%) or mean (SD)		
PROGRAM SERVICE OUTCOMES						
Screened for smoking status[1]	719 (79.1%)	570 (72.2%)	**<.001**	965 (77.4%)	324 (71.7%)	**0.015**
Received advice on how to quit smoking	360 (51.1%)	326 (53.1%)	0.478	500 (52.4%)	186 (51.2%)	0.717
Any counseling[2]	419 (59.5%)	342 (55.7%)	0.162	557 (58.3%)	204 (56.2%)	0.485
Any referral[3]	305 (43.3%)	295 (48.0%)	0.086	444 (46.5%)	156 (43.0%)	0.252
Any NRT/pharmacotherapy	162 (23.8%)	138 (23.1%)	0.764	226 (24.3%)	74 (21.3%)	0.258
SMOKING BEHAVIOR OUTCOMES						
Client smoking prevalence[1]	706 (77.5%)	615 (77.7%)	0.901	956 (76.5%)	365 (80.6%)	0.078
CPD	12.7 (8.24)	13.7 (8.56)	**0.032**	12.7 (8.22)	14.3 (8.76)	**0.002**
Past year quit attempt	335 (47.5%)	285 (46.3%)	0.687	474 (49.6%)	146 (40.0%)	**0.002**
Wanted help with quitting in program	267 (37.9%)	241 (39.3%)	0.622	377 (39.5%)	131 (36.0%)	0.239
Former smoker prevalence[1]	138 (15.1%)	118 (14.9%)	0.895	198 (15.9%)	58 (12.8%)	0.120
Quit during treatment[1]	68 (49.3%)	35 (29.7%)	**0.001**	84 (42.4%)	19 (32.8%)	0.187

[1]Sample is all clients for “Screened for smoking status,” “Client smoking prevalence” and “former smoker prevalence”; former smokers for “Quit during treatment”; and smokers only for all other outcomes

[2]Answered Yes/Occasionally or more for either one of the 3 counseling outcomes

[3]Answered Yes for either one of the 2 referral outcomes

Table 3. Multivariate regression analyses of associations of service-related and smoking behavior outcomes with state Medicaid expansion status and health insurance status[1]

	State Medicaid expansion status (Ref: No)		Health insurance (Ref: No)	
	AOR/AMR (95% CI)[2]	**p-value**	**AOR/AMR (95% CI)[2]**	**p-value**
Program service outcomes				
Screened for smoking status[3]	1.36 (0.94, 1.97)	0.098	**1.18 (1.01, 1.37)**	**0.040**
Any counseling	1.43 (0.94, 2.18)	0.090	0.97 (0.76, 1.24)	0.801
Any referral	0.92 (0.54, 1.59)	0.777	1.14 (0.83, 1.58)	0.421
Any NRT/pharmacotherapy	1.43 (0.56, 3.65)	0.451	1.05 (0.82, 1.35)	0.693
Smoking behavior outcomes				
Cigarettes per day	0.94 (0.83, 1.06)	0.287	0.91 (0.83, 1.00)	0.052
Past year quit attempt[3, 4]	**0.81 (0.67, 0.99)**	**0.036**	**1.51 (1.18, 1.93)**	**<0.001**
Quit during treatment	**3.77 (2.47, 5.76)**	**<0.001**	0.98 (0.52, 1.87)	0.961

[1] Adjusted for age, gender, race/ethnicity, education, employment status, treatment type, and tobacco-free grounds status; and also controlled for nesting of participants within programs and programs within state

[2] AOR = Adjusted Odds Ratio for binary outcomes; AMR = Adjusted Means Ratio for count outcomes

[3] Sample is all clients for “Screened for smoking status”; former smokers for “Quit during treatment”; and smokers only for all other outcomes

[4] Additionally adjusted for cigarettes per day